Citizens' Bulletin

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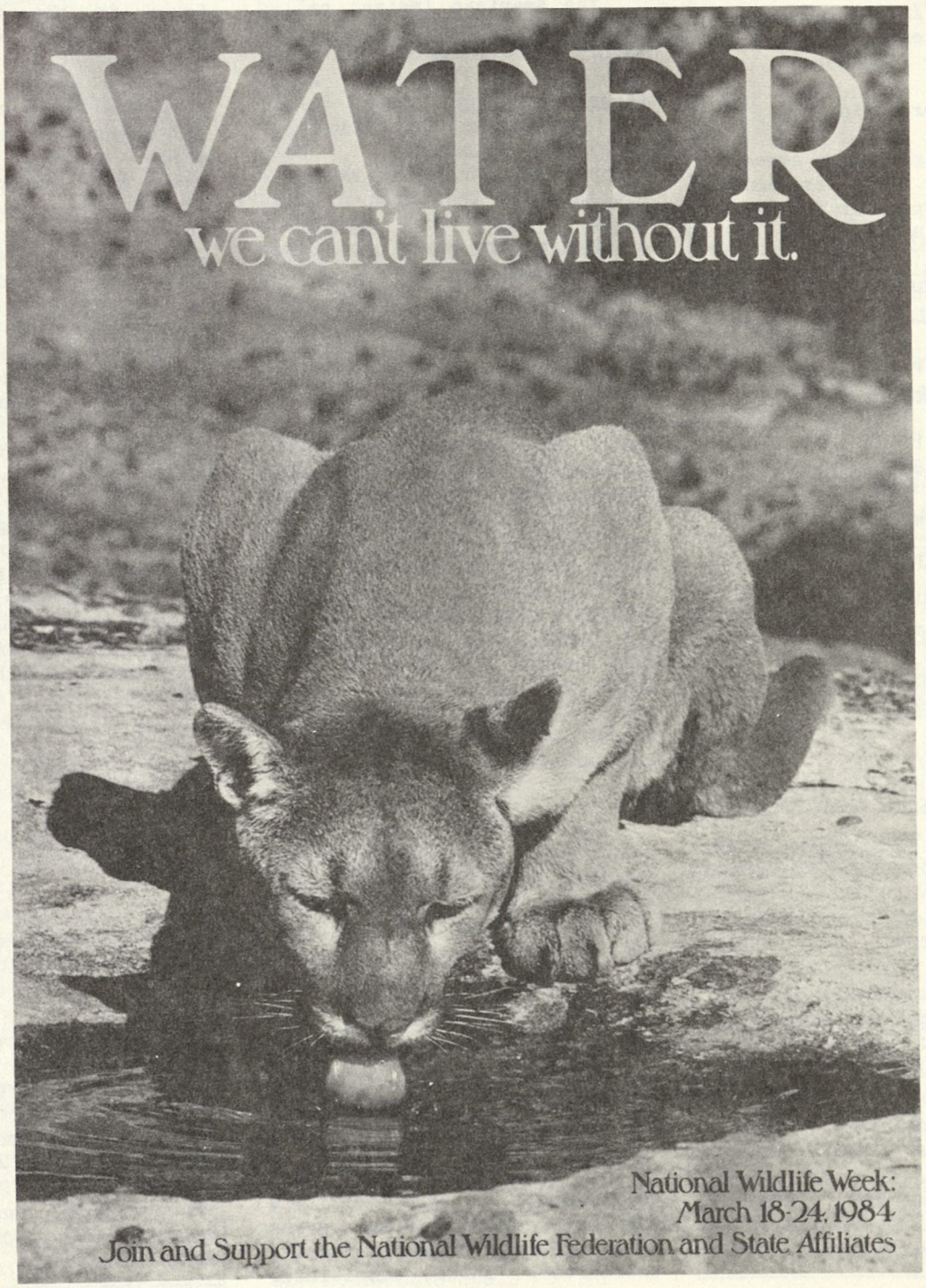

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Month of the Maple Moon

By Nancy Kriz

The American Indians called March the month of the "maple moon." The Indians were using the sap from the sugar maple (Acer saccharum) long before the arrival of the white settlers in America. They "tapped" the trees by making a cut into the tree with a tomahawk. Then, they placed a stick into the wound to direct the dripping sap into a birch-bark bucket or wooden bowl which sat on the ground beneath. To make syrup, they did not boil the sap down over a fire. Instead, they dropped hot stones into containers of sap. This caused the sap to evaporate, leaving behind the syrup. The Indians used maple syrup to flavor and season almost everything they ate -- meats, corn meal, and even fish. They also made maple sugar by further concentrating the syrup. It is known that they carved wooden molds into which they poured the hot maple sugar to make candy in the shapes of their favorite birds and animals.

The period of the "maple moon" was a time of singing and dancing, for the Indians knew that when the sap began to run warm weather was not far away. The early settlers soon copied the Indians and began to make syrup and sugar from maple sap. Cane sugar was difficult to obtain and very expensive, so the settlers quickly learned to sweeten foods with the maple products.

The sap buckets will soon be hanging in Connecticut and the local 1984 vintage syrup will be available shortly thereafter. Before complaining about its price, remember that it takes between thirty and fifty gallons of sap to produce just one gallon of syrup!

The following is a recipe for a simple creamy candy that can be made from maple syrup.

MAPLE CANDY

Two cups of pure maple syrup will be needed. (Do not use the conventional syrups found in the grocery stores. Most of these contain less than two percent of maple syrup.) Cook the syrup in a heavy pan over low heat until it reaches 230 degrees on a candy thermometer. Do not stir the syrup while it is boiling. When the temperature reaches 230 degrees, carefully remove the pan from the heat, disturbing the syrup as little as possible. Let the pan cool until the temperature of the syrup reaches about 100 degrees. Then, beat the candy with an electric mixer until it has turned very light tan in color and becomes hard enough to form into balls. If desired, a teaspoon of vanilla may be added for flavoring during the beating process. Chopped walnuts or pecans may also be blended into the candy at this time. The candy may be rolled into balls or simply dropped by the spoonful onto aluminum foil to harden. ■

Water is theme for National Wildlife Week

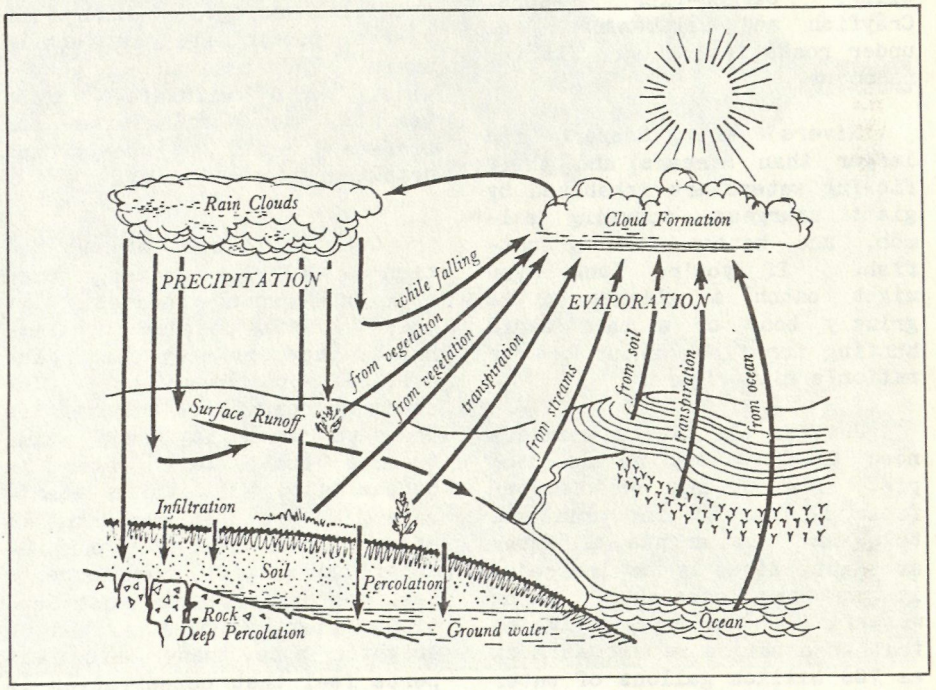
Take a look around you. How many things can you name that do not contain or were not produced with water? Your list is probably short, if you can make one at all. Water was needed to produce or grow the lumber in your house, the furniture you use, the clothes you're wearing, the eggs you may have had for breakfast, and even the paper you're reading!

Now pinch yourself. You may feel fairly solid, but about 65 percent of you is made of water. Your blood is 80 to 90 percent water, your muscles are about 75 percent water, and your bones about 20 percent. Your body uses water to digest food, eliminate wastes, and keep your temperature constant. To keep your body running smoothly, you need to take in at least five and one-half pints of water a day. This means the average person consumes up to 16,000 gallons of water in a lifetime.

Where does all this water we need come from? Although water covers 75 percent of our planet, only three percent is fresh water, and 75 percent of this is locked up in polar icecaps and glaciers. The remaining fresh water is constantly being exchanged among the surface of earth, plants and animals, and the atmosphere, through a process called the hydrologic cycle. Water molecules from ocean and land surfaces are warmed by the sun and evaporate into the atmosphere as water vapor. At the lower temperatures of high altitudes, the water vapor condenses to produce precipitation. About 85 percent of the precipitation falls directly into the oceans.

On land, the precipitation may run off surfaces into lakes, rivers, and streams; may soak into the soil; or be absorbed by plants. Water not absorbed by plants becomes ground water that is often pumped back to the surface or may eventually emerge from springs. Water from the soil, plants, and animals is also released into the atmosphere.

The recycling process has maintained a constant amount of fresh water on earth for about three and one-half billion years. The water has taken many forms, but it has not been destroyed. Part of the water



The hydrologic cycle

you used today to brush your teeth could have been swallowed by a dinosaur millions of years ago.

Water is part of every living thing. It provides an excellent place for plants and animals to live. We are fortunate to have several types of freshwater habitats in the United States. Among them are lakes, ponds, and freshwater wetlands -- still-water habitats that seem quiet but support a variety of life and are constantly changing. A largemouth bass breaks the surface to snap up a mayfly, giving a clue to the multitude of life these habitats contain. Snails and worms crawl along the bottom, feeding on algae and tiny one-celled animals. Minnows dart among aquatic plants to escape a hungry perch or snapping turtle. Along the banks and shores of these quiet waters, muskrats feed on cattails, water snakes sun themselves, and great blue herons spear unsuspecting fish.

The fast-flowing stream habitat also supports a variety of life. Plants such as mosses use special fasteners to attach themselves to rocks. Fish such as trout thrive in these bubbling, oxygen-rich waters. Crayfish and salamanders hide under rocks from hungry fish or raccoons.

Rivers are deeper and larger than streams and their flowing waters are inhabited by giant sturgeon, spawning salmon, and bottom feeding catfish. If you're lucky you might catch a glimpse of a grizzly bear or a bald eagle hunting for fish on one of our nation's wild rivers.

Just as plants and wildlife need fresh water, so do people. From the time we wash our faces in the morning until we take our last drinks of water at night, directly or indirectly we are constantly using water. It has been estimated that as a nation we use as much as 700 billion gallons of water a day. This is 18 times more water than was used per day in 1900. As a result of this increased use, clean fresh water is becoming scarce in many areas, and the truth of Benjamin Franklin's statement, "When the well is dry, we know the worth of water," is being felt across the country.

In many parts of our nation, people are using more clean fresh water than is naturally supplied. This has caused problems. In Arizona and Florida, for instance, more ground water is pumped out of the ground than is going back in, causing land to sink and creating huge crevasses and craters. In the Southwest, seven states and Mexico have legal claims to more Colorado River water than is usually carried by this waterway.

The amount of available water for our use is only part of the water supply problem. The other part is summed up by a line from "The Ancient Mariner" -- "Water, water everywhere, nor any drop to drink." It does us no good to have an abundant supply of water if pollutants have made it unfit for use. Each year, several billion tons of soil are washed into our waterways. Added to this are untold amounts of untreated sewage, industrial wastes, pesticides, and fertilizers. They pollute our waterways, kill wildlife, close beaches, and contaminate our surface and underground drinking water supplies.

Over 50 percent of our nation's drinking water comes from underground sources. If these sources become contaminated, they are very costly and difficult to clean up. Increasing numbers of communities have to truck in fresh water because their well water is contaminated with toxic chemicals. We are just beginning to study the pollution of our underground water. Some experts feel that this is our most serious water problem. On a brighter note, many water experts feel that conservation is the key to solving our nation's fresh water demands. We can save millions of gallons a day by using more efficient irrigation systems and water-saving plumbing fixtures, and by repairing leaking water systems. (It is estimated that 10 to 20 percent of the water piped through major eastern cities is lost through leakage.) Raising the price of water has also been proposed as a way to save this valuable resource. If people have to pay more for water, they probably will waste less. One point all water experts agree upon is that the proper management of our nation's water will be a major environmental challenge of the future.

National Wildlife week is celebrated each year during the first week of spring. The 1984 theme is "Water, we can't live without it." This issue of the Citizens' Bulletin contains many articles on water quality, quantity, and aquatic animals and activities. As you read through the magazine, we hope you will remember that, although common, water is indeed one of our most precious natural resources. ■

Cockeneo Island

Westport's recreational haven undergoes restoration

By John Kazzi

A long-term management effort now in its third year is gradually helping to restore Cockenoe Island, an undeveloped 27-acre island off Westport, to its former beauty after more than a decade of heavy recreational use.

Under the direction of the Cockenoe Island Steering Committee of Westport, the restoration effort's goal is to reverse environmental damage primarily caused by human intrusion into fragile island areas.

Located in Long Island Sound approximately one mile

John Kazzi

Westport's Cockenoe Island

south of Seymour Point yet within an easy canoe paddle of the town's Saugatuck River, the island was purchased by Westport from the United Illuminating Company in 1969 with $200,000 in State Open Space Funds. Held in private ownership for more than 200 years prior to its sale, the island has become a popular spot for boaters, who in the summer anchor off its beaches or in a natural harbor to swim, picnic, camp and clam.

Caretaker Bradford Palmer, who has watched the island for more than 25 years, says most of its users are respectful of the environment, and that people who spent their childhood summers on its beaches are now returning with their children. But because it lies off a town where only 2.8 of the 18.9 miles of coastline are available for public recreation and off a county where most shoreline is privately owned or reserved for residents only, the island has suffered because of its popularity.

Dune areas have been used as campsites and beach grasses uprooted to make room for tents. Food wrappers, paper plates and beverage containers brought onto the island became trash to be left behind or buried on the beach. Paths have been blazed across bluffs on the eastern shore, causing erosion through the dislodging of sand and soil. Boats have been beached in tidal marshes along Cockenoe's inner curve, destroying marsh grasses and carving away sections of peat.

Natural erosion has also caused damage. Several times in recent years, as storm tides battered the island's long sandspit off its western tip, sections of sandy beach were denuded and the cobble rock base of the dunes exposed. Sand once anchored by the beach grass has been carried off as water now washes completely over low areas of the spit at high tide.

The high bluffs, one of the island's most popular spots because of the scenic view of the Sound, have lost an estimated 15 feet since 1968 and have retreated up to 40 feet since the mid-1930s.

Faced with the man-induced and natural erosion, the town took the first step in its management program with the retention of a consultant to assess the damage and recommend corrective action. In its final report in September 1982, the consulting firm warned that if the island were left in its present state and no corrective action was taken, its most fragile areas would be destroyed and the very resources that attracted its users would be lost.

By December of that year, snow fencing owned by the town and more donated by a resident had been placed on the sandspit by Department of Public Works crews as a temporary measure to capture drifting sand.

In February of 1983, the steering committee received a special $5,000 appropriation from the Westport Board of Finance to purchase a larger amount of fencing and new beach grass plantings. Volunteer cleanup crews, including Boy Scouts, Explorer Posts and committee members themselves spent several spring weekends on the island, removing debris and taking off more than 100 bags of litter in one weekend alone. The additional fencing was installed and the beach grasses planted.

Another $5,000 appropriation was given to the committee in the summer of 1983 as the effort was included in the town's operating budget for the first time in the 1983-84 fiscal year. That money is being spent on fencing, more plants to replace those that did not take root, and informational signs. It will also be used to pay overtime to Westport Marine Police officers this year as they enforce a new town ordinance covering many activities on the island that became effective last July 1.

The ordinance restricts the island's most fragile areas from human use, sets aside wildlife sanctuaries and designates five camping areas. It prohibits camping on any other portion of Cockenoe, littering, allowing dogs to roam, bringing ashore glass bottles or containers and having beer in any container larger than one liter.

Marine police who took an educational role in the enforcement of the new regulations last summer will begin issuing citations this year, though Palmer said "99 percent" of the boaters who come to the island willingly complied with those regulations when asked. He also said there has been a noticeable change in the island since the steering committee's initial efforts began.

The committee this year is pursuing supplemental funding to provide Palmer with his own small boat and gasoline, a portable commode for the campsites, a poison ivy eradicator, additional fencing and signs. Although it was prepared to request an $8,000 grant from the state Department of Environmental Protection last November to cover those purchases, the committee is instead waiting to receive word from the DEP Water Resources Unit that an unexpected grant of $10,000 has been approved by the state Bond Commission. ■

Lovely to look at . . .

The mute swan in Connecticut

Wildlife Bureau Informational Series

General

The mute swan (Cygnus alor) is a large, all-white Eurasian "pond" swan introduced into the eastern United States in the mid-1800's. This swan is recognized by its orange bill, black at the base, with a prominent black knob on the forehead and the graceful curved neck held in an S-shape with the bill pointed down while the bird is swimming. The male swan, or cob, is usually larger in size with a more prominent knob on his forehead but is otherwise identical to the female, or pen. Young swans, called cygnets, are usually white, but gray-colored cygnets are not uncommon. Adults average 25 pounds and have a wingspan between seven and eight feet. Although mute swans are usually silent, they hiss and utter low, rasping "barks" when alarmed or threatened, and in flight their wings produce a whistling sound audible up to a mile away.

Range

Large numbers of mute swans are concentrated along the Atlantic coast from Massachusetts to Maryland with a small population of about 500 in Michigan. Mute swans do not migrate long distances in the spring and fall but move from ice-bound freshwater ponds to nearby open coastal bays in the winter where they gather in flocks of up to 100 or more. In Connecticut swans are protected. The coastline area alone supports one-quarter to one-half of the entire eastern wintering population of mute swans along the Atlantic seaboard. Approximately 100 pairs of swans have been recorded nesting along the Connecticut coast, and up to 15 miles inland along the major rivers, as well as in some inland lakes and ponds.

Reproductive Biology

Most mute swans breed at age three and remain with the same mate for life. Courtship display begins in late February and each pair vigorously defends a territory (four to 10 acres in size) from other swans. The nest, constructed in late March or early April, is typically a large (4' x 4') somewhat circular pile of aquatic plants built on an island or in clumps of cattails or grasses along the edge of the water. Flooding can be an important cause of nest failure, although the pen may renest up until late spring. An average of four to six eggs are laid in a three- to four-inch depression in the nest center and are incubated by the pen for 36 to 38 days. The cob becomes most aggressive defending the incubating pen or the young cygnets and will chase and even attack other wildlife and people nearby.

Before leaving the nest, young cygnets may be subject to chilling during rainy periods and may die from exposure. Turtles may prey on the young birds after they leave the nest until they are about 40 days old. Most cygnets have fledged by early fall but remain with their parents until late fall. Survival after fledging is high and 50 percent of the young can expect to survive through age

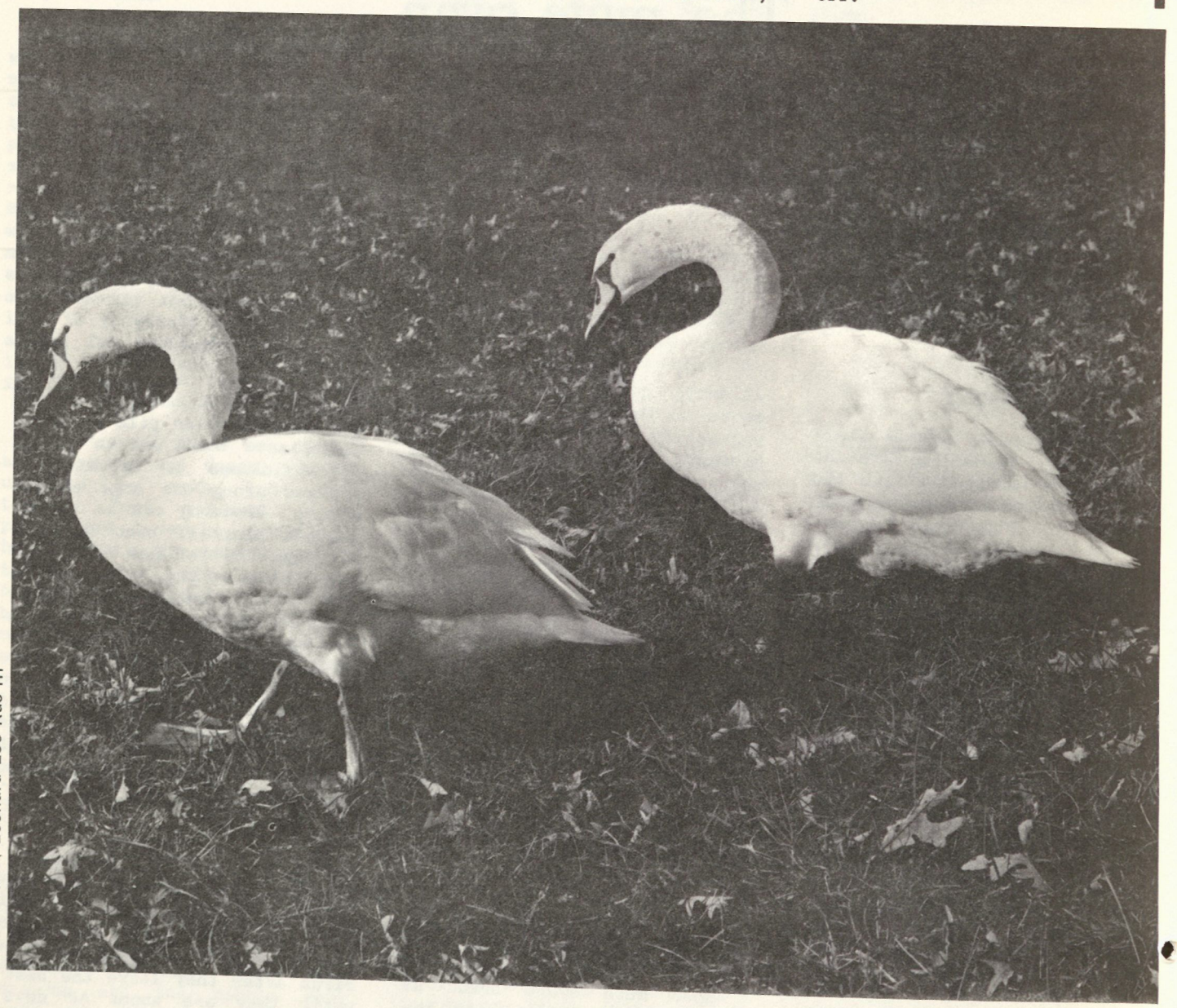
seven. Mute swans are long-lived (up to 20 to 30 years) and can breed every year after age three. However, the reproductive rate drops considerably after age 20.

Economic and Social Values

The only positive economic value mute swans have in Connecticut is esthetic. One potentially negative economic impact of the swans is their territorial defense of an area, which may affect the native breeding waterfowl populations. Not only do the swans compete for nesting areas with other waterfowl, but they graze heavily on aquatic vegetation which is an important food source for native waterfowl.

Management of Nuisances

While mute swans do appeal to many Connecticut residents, the aggressive nature of the species and its close association with human activity will undoubtedly continue to result in swan nuisance problems. One thing citizens can do to reduce nuisance swan problems is to avoid feeding them. Feeding helps attract birds to areas where they may not be wanted and swans that become used to hand-outs sometimes get belligerent if the food is cut off. ■



Mute swans; Leonard Lee Rue III

Water-use information available

By Sandy Prisloe and Howard Sternberg,
Connecticut Water-Use Information Program

Have you ever wondered where your drinking water comes from? If you are one of the more than two and one-half million people in Connecticut getting drinking water from a water utility you probably have not. All you have to do is turn the faucet and out comes water. If, however, you are one of the approximately 500,000 people obtaining drinking water from a domestic well, you probably have had occasion to think about your water supply. Perhaps a power failure has made you realize how important and vulnerable that backyard well is; or maybe a summer drought has left your well temporarily dry; or worse, maybe you are one of a growing number of people whose wells have been lost through groundwater pollution.

The water supply picture in Connecticut is indeed complex. There are literally hundreds of public water suppliers located throughout the state and thousands of privately-owned wells. Drinking water for these suppliers is obtained from a variety of sources including reservoirs, stream diversions and wells. Insuring that these sources of water are well managed and protected from pollution is becoming an increasingly important and difficult task.

The Connecticut Water-Use Program

Until recently, information describing the potable water supply was limited and was often difficult to obtain. Through a relatively new cooperative program between the DEP Natural Resources Center, and the Water Resources Division of the U.S. Geological Survey, the state is developing a comprehensive information system on how water is used in Connecticut. Data collected through this program will be used to support the information needs of a number of water quality and water quantity planning and management programs. Examples of state programs include Connecticut's "Conservation and Development Policies Plan," DEP's 303e Basin Planning Program, Department of Health Service's water quality monitoring efforts, DEP's Water Quality Standards and Classifications and the new Water Diversion Act.

To date the major effort of the "Connecticut Water-Use Information Program" has been the development of a data base describing public water supply water use: who the suppliers are, where their wells and reservoirs are located, how much water is withdrawn from these sources and to whom the water is delivered. Future plans for the program include the inventory and collection of water-use data for industry, agriculture and an update of a 1979-80 survey of power generating facility water use. The summary that follows is based on public water supply information collected as a result of this program.

1980 Public Water Supply Water Use

The U.S. Bureau of the Census reported the state's 1980 population to be 3,107,576. Community water supplies, of which there are about 700 in Connecticut, provided water for approximately 2,564,000 people, about 82.5 percent of the total population. The remaining 543,576 people obtained their drinking water from privately-owned wells.

The 700 community water supplies represent a very diverse group. The Connecticut Public Health Code defines a community water supply as one providing service to two connections or 25 people throughout the year. This means that community water supplies include apartments, condominiums, subdivisions, regional water authorities, state institutions, municipal housing

authorities, mobile home parks, small to large municipally and privately-owned utilities, etc. Of the two and one-half million people served by community supplies in 1980, approximately 95 percent were served by systems serving 1,000 or more people.

For the most part, the large water utilities are located in the more densely-populated counties of Hartford, Fairfield and New Haven where the percentage of people receiving water from community water supplies in 1980 was 91.7, 82.7 and 85.4 respectively. The total 1980 populations of these three counties was 2,376,246 people, which represents slightly more than three-quarters of the entire state's population. The total number of people on community systems was 2,058,434. These figures indicate that the dense population concentrations in urbanized portions of Connecticut necessitate large centralized water supply systems and provide the economic base necessary to support the required utility infrastructure.

The more than 500,000 other people getting potable water from community systems were spread throughout the remaining five less densely-populated counties. In these areas community water supplies tended to be small systems serving only the people living in a particular subdivision or apartment complex, for example. The costs to develop distribution systems capable of delivering water to dispersed rural populations is too great to justify their construction and continued operation and maintenance.

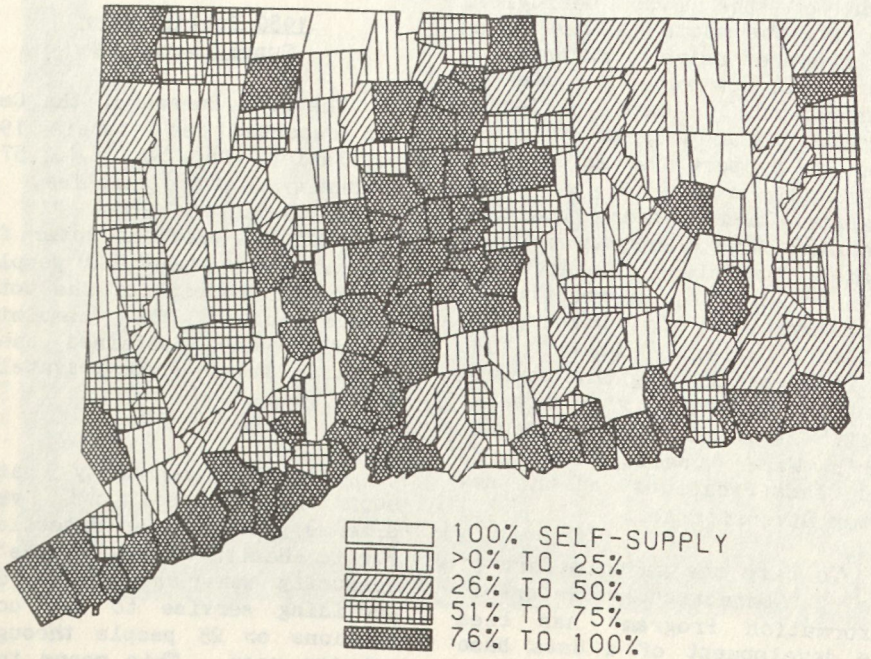
The map below depicts the percent of each town's population that received potable water from community supplies in 1980. In general, the more densely-populated a town, the greater the number of people served by some community system.

During 1980, 83 percent of the water used by community systems came from surface water sources. There were 75 distribution reservoirs and three stream diversions used where water was pumped directly from these water bodies for potable use. In addition, approximately 160 storage reservoirs and stream diversions were used to augment distribution sources. Surface sources were used by a total of only forty-nine systems; nineteen used surface water exclusively while thirty used a combination of surface and ground water to supply their customers. During the year surface water was used at an average rate of 314 million gallons per day (mgd) and ranged from a high monthly average of 357 mgd during July to a low of 275 mgd during November.

By comparison, ground water use by community systems averaged 65 mgd for the year and was withdrawn from approximately 1,400 public water supply wells. Like surface water, ground water use fluctuated ranging from a high of 83 mgd in September to a low of 44 mgd during January.

The graph below shows how surface water and ground water use varied during 1980. It is quite obvious that there is a significant correlation between time of year and demand. Much, but probably not all, of the increase in the summer months can be attributed to greater residential use, particularly outdoor use. However, the graph represents water use for all user categories including

Population Served By Community Water Supplies 1980



Population served by community water supplies is shown as percent of 1980 census town population.

residential, industrial, fire protection, commercial establishments, water used by utilities for main flushing, water lost through system leakage, etc.

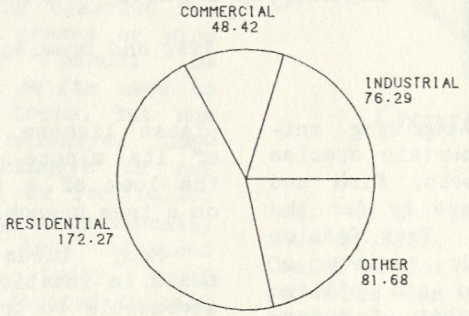
The following table and pie chart depict the average rate at which water was sold to different customer types and lost through leakage during 1980.

Residential	172 mgd
Industry	76 mgd
Commercial	48 mgd
Others (lost, main flushing, etc.)	83 mgd
Average for all types of uses	379 mgd

As this brief description of community water supplies in Connecticut indicates, understanding public water supply requires a tremendous amount of data. Some of the information is static in nature and rarely changes from year to year.

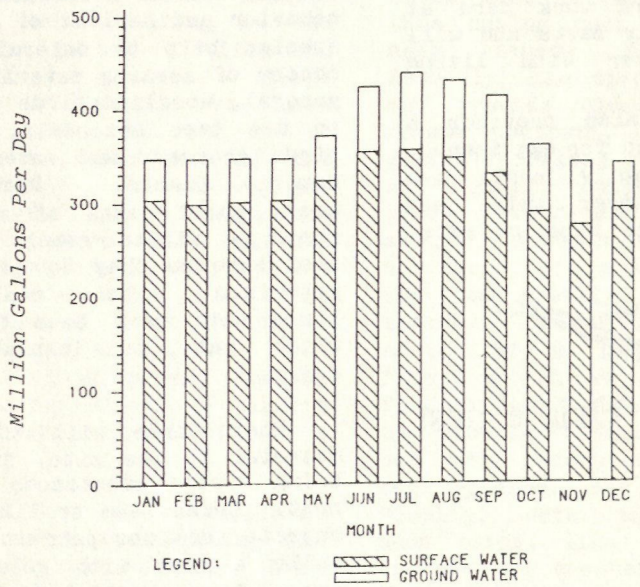
Other information is constantly changing with increases or decreases in demand. The goals of the Connecticut Water-Use Information Program, from which the data for this article originate, are to collect relevant water use and water resource data and to make this information available to governmental agencies and the general public.

1980 Annual Sales to Customers in MGD



Note: Other includes lost and unaccounted for water; water used by the utility; water used for fire protection; and water sold to public authority or other customers.

Surface and Ground Water Use in 1980



Obviously the differences in public water supply throughout the state will require different management and planning strategies to protect existing and future sources of supply. Knowledge about how, where and to what extent water is presently being used is critical to this effort.

Information on the Connecticut Water-Use Program and on water use in general can be obtained by contacting:

Connecticut Water-Use
Information Program
165 Capitol Avenue
Hartford, CT 06106

Reasonable requests for information from the information system are available free of charge. The following publications can be obtained at the above address:

"State of Connecticut Public Water Use: State and County Data," no charge;

"Atlas of the Public Water Supply Sources & Drainage Basins of Connecticut," $10.00;

"A 1980 Survey of Major Water Utilities in Connecticut," $10.00. ■

Nature Notes

Avian architects

Text and Drawings by Penni Sharp

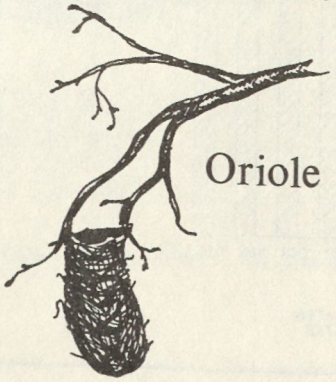
Of the nest-building animals, including certain species of mammals, insects, fish and reptiles, birds are by far the master craftsmen. They fashion nests in a wide variety of sizes and shapes and utilize many different types of materials. They place their nests in almost every conceivable location. Chimneys, downspouts, windowsills, treetops, dead stumps, telegraph poles, and riverbanks have all been used as nest sites. And the list is by no means complete. Although many of us are able to identify a number of birds that frequent our woods and fields, there are probably few of us who could come upon an abandoned nest and name its former occupant.

The winter months are good ones for looking at nests. There is no danger of disturbing the bird, and the foliage is off most trees and shrubs allowing for easier observation. When the leaves drop, often a nest is revealed where one might not have had an inkling of a bird's presence the previous spring. This should not be surprizing as one of the reasons that birds build nests is to protect themselves, their eggs and ultimately their young from predation. Thus nests are often carefully camouflaged and/or inaccessible.

A bird keeping its nest inconspicuous by means of camouflage will usually choose materials in the immediate vicinity. For example the ovenbird, which nests on the forest floor, covers its nest with dry leaves making it difficult, if not impossible for one to distinguish the nest from its surroundings. The ruby-throated hummingbird places lichens on the outside of its minute nest giving it the look of a patch of lichen on a tree branch.

Many birds place their nests in locations that are inaccessible to predators. Nests may be located at the tips of tree branches, in cliff ledges, tree cavities or on or over water. One such nest is that built by the pied-billed grebe. This structure, fashioned of aquatic plants such as cattails, reeds and sedges actually floats on the water providing protection from terrestrial predators. The northern oriole (Baltimore oriole) weaves an intricate, pendant-shaped nest at the tips of drooping branches -- a location out of the reach of most mammals, snakes, or would-be predators. Well hidden nests often provide the additional benefit of protecting young nestlings from the burning rays of the sun or the chill of rain and snow. Some birds including several sparrows and the eastern meadow lark work hard at concealing their nests and will cover them over with living plant material.

The nest also provides a warm environment for egg incubation. Frequently nests are built with larger twigs and branches at the base to maintain support while the interior or cup of the nest contains finer, softer material which insulates the eggs and later the young.



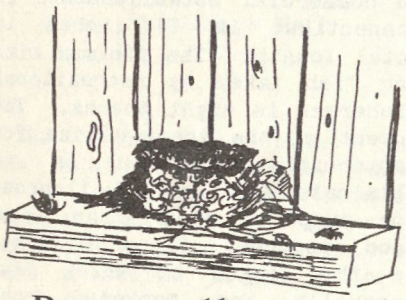
Oriole nest

The choice of materials used by individual birds in nest building is as varied as the birds themselves. Some birds use little or no material at all. Several of the shorebirds deposit their eggs in a scrape or depression made in the ground. These nests are sometimes lined with pebbles, and the speckled eggs are thoroughly camouflaged. Many woodpeckers, which nest in tree cavities, lay their eggs at the bottom of the excavation on a bit of sawdust. Some birds are at the opposite end of the spectrum, building elaborate nests constructed with a variety of materials. Nest materials may be composed of animal, vegetable or mineral matter, although plant materials are the most widely used. Many birds use a combination of materials. The behavior and habitat of a given species help to determine its choice of nesting material. In general, woodland birds are apt to use tree materials, meadow birds grasses, and water birds aquatic plants. Ducks and geese build nests of material that is within reach of the nest site as they do not carry material. Their nests are lined with warm down feathers which help to insulate the eggs.

Most birds will transport material to the site, and many bring exotic substances to the nest. Crows seem to like shiny objects, and one pair in Bombay built a nest with gold spectacle frames pilfered from an open shop window. Shedded

snakeskins are used by several species of birds including the crested flycatchers. The American goldfinch lines its nest with thistledown. The goldfinch is a relatively late nester, and this may be due to the fact that thistledown does not appear until the flower has finished blooming, usually around mid-July.

A number of birds use mud in their nests which serves to give the nest stability and to help cement it in place. Phoebes, robins and barn swallows are included in this group, and each of these birds may choose a man-made structure on which to place the nest. A robin will often use a ledge or windowsill; a phoebe prefers a site near water and frequently places a nest on a bridge girder; barn swallows, as their name implies, choose barns and line their nests with poultry feathers.

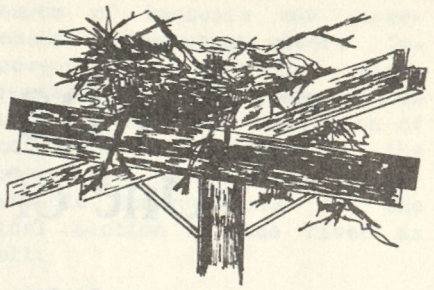


Barn swallow nest

One unusual animal product used in nest building is the bird's own saliva. Swifts and hummingbirds secrete large amounts of saliva at nest building time and use it to cement the ingredients of the nest together. In this way the chimney swift glues twigs together to form its half-cup nest and attach it to the inside of a chimney. In China one species of swift creates a nest entirely of saliva. This nest is highly prized and is the main ingredient of bird's nest soup, considered a delicacy.

Birds are quite adaptable when it comes to choosing materials or nest sites. Many crested flycatchers' nests will contain a bit of cellophane instead of the customary snakeskin. The chipping sparrow was once known as the "hairbird" because it lined its nest with horsehair. However, when the automobile replaced the horse, the supply of horsehair declined. Chipping sparrows now substitute fine grasss or wire when horsehair cannot be found. Chimney swifts used to nest in hollow trees, but now actually prefer chimneys. Competition for chimneys is not nearly as great as for hollow trees. Ospreys traditionally nested in the tops of dead trees; however today their nests are often located on telephone poles. One bird -- the eastern bluebird, has been less adaptable to change. Due to an increasing shortage of natural nesting cavities and competition from the introduced English sparrows and starlings, bluebird numbers have declined markedly. Fortunately, the placement of bluebird nest boxes in many communities has benefited the bluebird, and populations are beginning to re-establish in Connecticut.

For anyone interested in identifying nests, the surest way is to try to observe the occupant. If this is not possible, there are several clues that may help. The habitat is an important consideration...is the nest located in wood, field, orchard or swamp? Many birds have preferred habitats; thus noting nest location can help narrow the choices. Secondly, the size of the nest may provide clues as to its former occupant. Large nests generally belong to large birds and small nests to small birds. Placement of the nest should also be noted. Is it on the ground, in a shrub or tree, and how exactly is it positioned? Is it nestled in the crotch of a tree, suspended from a branch, or attached to a flat surface? Look at the way the nest is fashioned. Is it a cup nest, a deep nest, where is the opening, is it covered? Finally, note the material. Some birds, like the chipping sparrow and crested flycatcher, have definite preferences for materials used in nest building. To aid in the identification process, a field guide is useful if not essential. Books on nests can usually be found in libraries or at nature center bookstores.



Osprey nest

One way to become acquainted with nests is to observe birds in the act of building them. You may wish to provide assorted nesting material for birds and then watch for takers. Appropriate material includes: lengths of yarn or string, pieces of soft cloth, fur, bits of burlap, feathers, dried sphagnum moss, hair, cotton, and dried grasses. Place these items in a tree crotch or a container made of wood or hardware cloth, or hang bunches of material from clotheslines.

If you are able to watch the nest building process, a word of caution. It is best to keep a good distance away from the nest until the young have fledged. If one approaches too close, it may disturb the parent, but perhaps of greater concern is that one may alert predators to the presence of the nest, endangering the lives of the young birds. So enjoy this rite of spring, but from a safe distance! ■

All migratory birds are protected under the federal Migratory Bird Treaty Act, and under this act it is illegal to possess birds. eggs. nests. feathers or parts of anything classified as a migratory bird. Violation of any of the provisions of this act may result in fines or prison sentences or both. Therefore, observe nests in the wild; do not remove them from their natural locations.

The winter flounder
One of the fisherman's favorites

By Eric Smith, Assistant Director, Bureau of Fisheries

The winter flounder is a species of great historical importance in the State's expanding recreational fishery. It is also one of the staples of the New England fish consumer's diet. In 1983, reported commercial landings of winter flounder in Connecticut approached 1,500,000 pounds, of which about 500,000 pounds were taken from the waters of Long Island Sound. Recreational catches of the species from Long Island Sound for the two most recent years on record -- 1979 and 1980 -- were approximately 1,000,000 pounds for each of the two years.

Many of Connecticut's estimated 350,000 marine saltwater anglers fish for flounder throughout the year, providing the dual benefits of nutritional food and valuable recreation. In addition, approximately 100 residents of Connecticut are licensed each year to take flounder and other finfish by commercial angling. Both groups provide a valuable service in supplying consumers -- including themselves -- with fresh seafood.

The greater part of the commercial and recreational catch is taken from the late fall through the late spring of the year. Most commercial landings are made by the trawl fishery with lesser contributions made by commercial anglers. Commercial catches from Long Island Sound waters are taken predominantly from the eastern area (43%) and the central area (51%). The landings either enter the Connecticut retail market as fresh fish sold to restaurants and fish markets or they are shipped to New York.

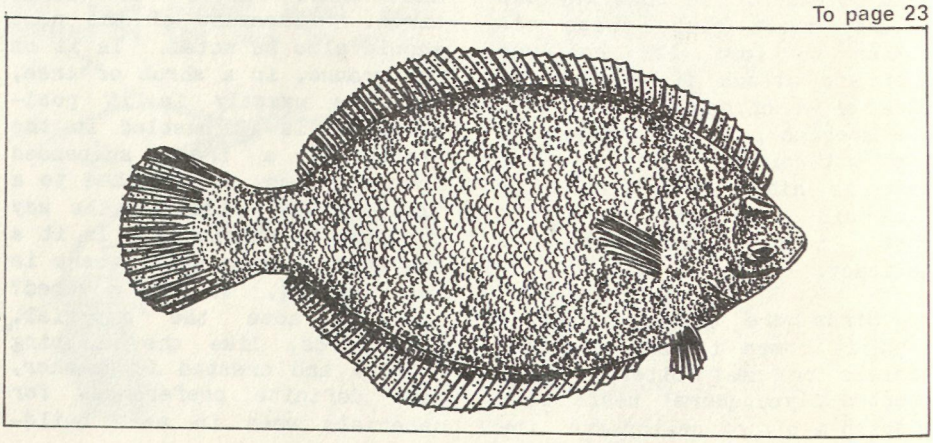
Twenty-five percent of all recreational angling effort in Connecticut waters is directed at the winter flounder, making it one of the most popular marine recreational species in the State. Winter flounder catches are made throughout the Sound with anglers who fish from boats almost three times as successful as those fishing from shore. The species is important both to sport fishermen and to commercial fishermen due to its availability during the winter months when few other species are abundant in Connecticut waters.

Management of the flounder resource in Connecticut is accomplished by the regulation of size limits for fish taken by commercial and recreational fishermen. This is done to protect fish which have not attained sexual maturity. In addition, certain state waters are closed to trawling in order to protect fish from commercial fishing activities in spawning areas. No restrictions exist on angling in spawning areas.

Approximately one-half of all female flounder have reached spawning size at ten inches while virtually all have reached maturity at 12 inches in length. Male flounder attain sexual maturity at smaller sizes than do females. The minimum size limit for winter flounder taken or sold by commercial fishermen or possessed in commercial establishments in Connecticut is 11 inches in total length. The minimum size for fish taken by recreational fishermen is eight inches. The intent of the greater size for commercial fishermen is to eliminate the use of flounder for purposes other than as a food resource. Since 10 inches is the length at which fish generally are marketed, the 11-inch limit effectively achieves this purpose.

Two area closures exist which regulate the use of trawlers in nearshore areas. The first, mandated by statute, closes the mouths of estuaries to all trawlers. Since es-

To page 23



Rosemary Gutbrod

For Your Information

Connecticut's Clean Water Program

By Tess Gutowski,
Senior Environmental Analyst,
Water Compliance Unit

The public investment in clean water has visibly "paid off" in many of Connecticut's rivers and streams. A generation ago, some of the state's rivers exhibited noxious odors and floating solids and scum. Among the major water quality successes are the Connecticut, Farmington, Willimantic, and Naugatuck Rivers.

Over 90 percent of the total miles of rivers and streams in Connecticut meet the criteria of "fishable-swimmable" water quality. Of the 963 miles of major waterways, 70 percent meet this goal.

Substantial improvements in water quality over the next few years are anticipated in the Quinnipiac River which has long been considered one of Connecticut's most polluted rivers. Upgraded municipal wastewater treatment systems in Meriden and Southington are expected to raise critically low dissolved oxygen concentrations and reduce the characteristically high counts of bacteria now experienced in the upper river. Improvements to municipal waste treatment now under way in New Haven and stricter regulation of industrial discharges to the lower river will result in noticeable improvements to the tidal section of the river as well.

Ground water quality in the state is susceptible to adverse impact from landfills, leaking underground fuel and chemical storage tanks and other land-use activities. Quality of the state's ground waters cannot, however, be reported in the manner that surface waters are. It is accurate to report that a large majority of the state's land area has ground water suitable for drinking without treatment.

There are many competing demands placed upon ground water resources for both water supply and waste disposal and there are numerous localized instances of ground water contamination that threaten or preclude the use of ground water for drinking water.

Connecticut's DEP Water Compliance Unit monitors the overall water pollution control program for the State. The Unit employs a variety of methods to obtain compliance including technical assistance, civil penalties, administrative orders, cease and desist orders and consent orders. During 1983, the Unit issued new administrative orders that brought the cumulative total of orders to 3,221 since May 1967. The program is comprehensive and covers NPDES discharges, pretreated and other discharges to the ground waters. Program goals are to regulate all discharges through a comprehensive state-wide program requiring treatment of wastewaters consistent with technological feasibility.

The Unit is also responsible for the wastewater treatment construction grants program. Since 1972, public investment in the State's Clean Water Program has totaled over $ 1.2 billion. The funding sources include $480 million from the federal govern-

Table 1

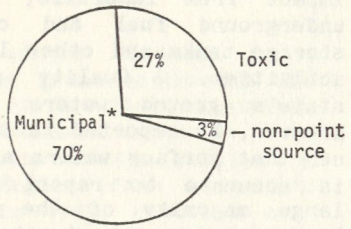
Major surface water quality parameters of concern and discharge sources, 1982

	PARAMETERS							
Discharge Sources	Coli-form	D.O.	Nutri-ents	pH	Temp.	Toxics	Tur-bidity	Most Serious Problems
Municipal	X	X	X					Dissolved Oxygen/ Coli.
Industrial		X		X	X	X		Toxics/pH
Non-point	X	X	X	X			X	Iron Coliform/ Turbidity Sedimen-tation

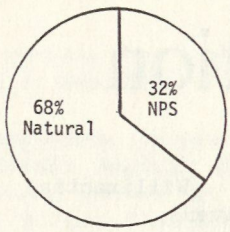
Causes for Less Than Full Support of Designated Uses in 1982

Figure 1. Pollutant Sources -- By Percentage

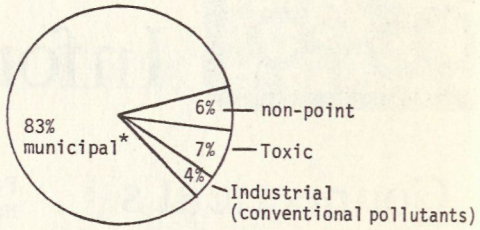
a. Streams and Rivers



b. Lakes and Reservoirs



c. Estuaries and/or Oceans



* includes significant combined sewer overflow problems

ment, $106 million from the state government, and $655 million from municipalities.

While considerable progress has been made, problems dealing with municipal treatment plants, combined sewer overflows and toxic pollutant control and other sources remain. The majority of existing water quality problems are caused by combined sewer overflows or the need for advanced treatment of municipal sewage or industrial wastewater beyond the statewide technology-based requirement of "Best Practical Treatement" (BPT) or "Best Available Treatment" (BAT).

Non-point sources of pollution such as leachate from landfills, urban runoff, or erosion and siltation also contribute to degraded water quality in some areas. The upper Housatonic River is a major exception to this general pattern. There, "fishable-swimmable" water quality exists but water quality goals are not being met due to sediment contamination with PCB's. Regulations prohibit the keeping of trout from the upper Housatonic River for human consumption; however, recreational use of the river for swimming, boating, and as a "no-kill" sport fishery is increasing.

These major problems will continue with us through the 1980's and possibly into the 90's. The Department is actively pursuing programs to remedy these serious water pollution problems. In addition, improved ground water quality protection is specifically highlighted as a key DEP program initiative.

DEP's report entitled "Progress in the Clean Water Program for the State of Connecticut, 1983" provides a ready comparison of surface water quality in 1972 and 1982. This report was developed to outline the water quality problems of national concern. The report also identifies the types and degrees of remaining pollution problems in the state.

The report shows significant improvements in the state's water quality between the years 1972 and 1982. By 1982, water quality goals of fishable-swimmable standards or better had been achieved with 64 percent of the major rivers, 95 percent of the lakes and reservoirs, and 80 percent of the harbors and estuaries.

Causes for less than full support of designated uses (fishable-swimmable, industrial, and agricultural uses) in 1982 are shown in Figures 1a. b, and c, which illustrate pollutant sources by percentage for streams and rivers, estuaries, lakes and reservoirs. Municipal and industrial discharges account for a significant quantity of pollutants entering the various water systems. The figures indicate streams and rivers are impacted by municipal waste (70%), toxic waste (27%) and non-point sources (3%). Estuaries and/or oceans are the recipients of municipal wastes (83%), toxic waste (7%), non-point source pollution (6%), and industrial conventional pollutants (4%). Lakes and reservoirs are affected by natural pollutant sources (68%) and non-point sources (32%).

The "health" of a water system is determined by various biological, chemical and physical parameters. Table 1 indicates the major water quality parameters of concern to the DEP and their associated discharge sources. The DEP reports that 110 stream/river miles and six square miles of estuary have been identified as being affected by toxics. No acreage of lakes/reservoirs has been affected by toxics. ■

Testing for toxics

DEP's Water Compliance Unit monitors pollution

By Lee Dunbar, Senior Environmental Analyst, Water Compliance Unit

Any substance which can adversely affect the survival of fish and other forms of aquatic life is considered a toxic pollutant. Brief exposure to a relatively high concentration of a toxic substance can result in death or debilitation, an effect termed acute toxicity. Chronic effects such as reduced reproductive success or poor survival of sensitive life stages can occur as a result of longer term exposure to much lower concentrations. Both acute and chronic toxicity can drastically change the overall characteristics of a stream community. Some types of aquatic life are more sensitive than others. Pesticides, for example, are highly toxic to aquatic invertebrates like mayflies, caddisflies, and midges yet may not affect fisn until present in much higher concentrations. Over time the more sensitive species will disappear leaving only a few, highly resistant species to inhabit an area which once supported a diverse, balanced, productive aquatic community.

During the 1970's, regulation of toxic pollutants emphasized use of "technology-based, end-of-pipe" limits on the quantity of toxic substances which could be discharged to surface waters. Environmental engineers at DEP evaluated each industry to determine what type of waste treatment system was appropriate based on the manufacturing process used and the type of waste generated. Permit limits were then set which reflected proper operation of the waste treatment system. This approach has several advantages, the principal one being that all competing industries were required to install similar waste treatment systems. Technology-based permit limits were rapidly incorporated into discharge permits by DEP and great strides were made in reducing in-stream toxicity using this approach.

Although DEP continues to include technology-based limits in many permits today, in some areas these limits are not stringent enough to ensure that aquatic life is adequately protected from toxic pollutants. Small streams which offer little dilution for wastewater and areas where many industries are clustered together are typical of situations where more work needs to be done. These critical areas have been identified by DEP and progress is being made towards developing what has been termed "water-quality based" permit limits for these discharges.

Several approaches can be used to develop water-quality based permit limits, all of which depend on measuring in some way the toxicity of a substance to aquatic life. Simply put, toxicity testing involves placing live fish or other test organisms in solutions of different pollutant concentrations and observing the effect of the pollutant at each concentration. Data from these tests is generally reported as the EC50, or the concentration where the adverse effect is seen in 50 percent of the test organisms exposed. Commonly used test organisms include trout, bluegill sunfish, fathead minnows, and several species of Daphnia, a small freshwater crustacean.

DEP's toxicity testing laboratory routinely tests wastewater samples using Daphnia, and plans are being considered to expand this facility to allow for tests using fish as test organisms. DEP has also begun issuing orders to pollutant dischargers requiring them to conduct their own tests and report the results for evaluation. Once the toxicity of the pollutant is known, DEP's aquatic biologists work with the environmental engineering staff to determine the level and type of waste treatment which will be required to provide adequate protection for organisms living downstream of the pollutant source.

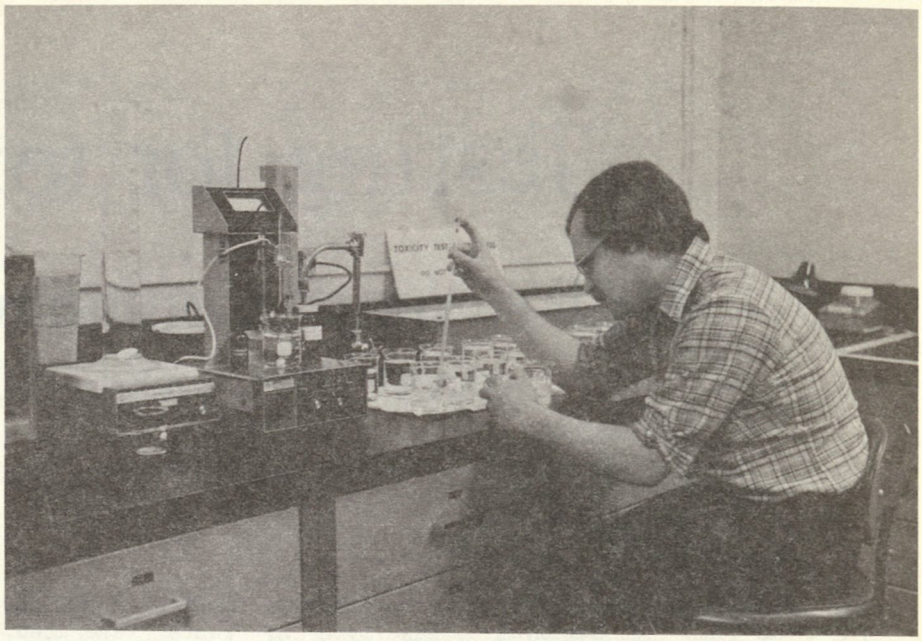
A second approach which has been used by DEP involves using toxicity data to establish a maximum permissible level or criteria for specific toxic substances. Permit limits are

then set for each wastewater discharger which will keep in-stream concentrations of that substance below the criteria level. The 1977 Clean Water Act focused attention on developing criteria for 129 pollutants including the most commonly encountered toxic substances discharged to Connecticut streams; the heavy metals such as copper, zinc, cadmium, and chromium. The USEPA has issued criteria for most of the 129 based on laboratory toxicity testing. DEP uses the Federal criteria as a starting point for deriving criteria for individual streams in Connecticut.

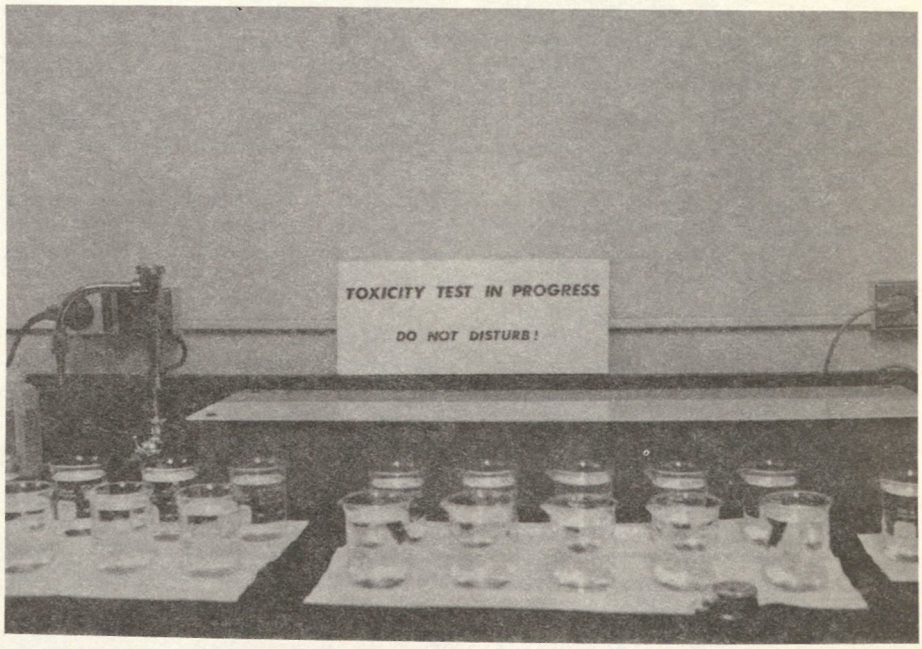
DEP has participated in two major cooperative efforts with EPA to evaluate methods for setting stream criteria. The first was aimed at developing criteria for lead and zinc in the Norwalk River. Completed in 1981, this project involved extensive water quality data collection, biological sampling in the river, and toxicity testing with Rainbow trout and Daphnia. As a result of this effort, DEP gained national recognition for its water-quality based toxicity control program.

During 1983, research personnel from EPA's Research and Development Branch returned to Connecticut and, with the assistance of DEP, embarked on one of the most extensive data collection efforts ever attempted for any stream in the U.S. The principal objective of this most recent study was to evaluate how well the results from laboratory toxicity testing compared with actual measured stream impacts. Data collected for the Naugatuck River during this study is still being analyzed, but preliminary indications are that the approach being taken by DEP is a highly effective means of regulating toxic pollutants.

It has been estimated that four million potentially toxic industrial chemicals are currently in existence, with over 63,000 of these in common use. Clearly criteria can not be developed for all of these chemicals. Many toxic pollutants are found in complex mixtures. DEP will continue to employ a mix of methods including use of criteria where they are available. Because of the early successes of Connecticut's program, the state is currently well represented at both the regional and national level on regulatory committees and professional associations charged with refining the technical bases and policy issues involved with control of toxic pollutants. Because of DEP's firm commitment to effective control of toxic pollutants, the future holds great promise for improved water quality and healthy populations of fish and aquatic life for all citizens to enjoy. ■



Thom Haze, Water Compliance Biologist, prepares water samples for toxicity testing.



Leslie Bieber photos

Toxicity test requires that organisms be placed in solutions with varying concentrations of chemicals.

EPA honors Connecticut residents

In December of 1983, Region I of the U. S. Environmental Protection Agency reinstated its policy of holding annual meetings for interested citizens. The highlight of the event was the presentation of awards for service in various environmental areas. Connecticut was particularly well represented, as three awards went to people or organizations in the state.

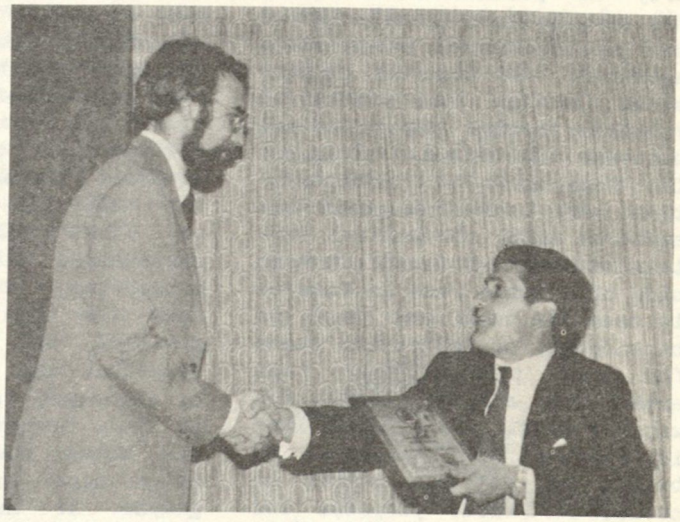
Regional Administrator Michael Deland, who presented the awards, was pleased with the quality of the nominations. Over 75 organizations or individuals from throughout New England were recommended for awards in several catagories.

One of the large corporations headquartered in Fairfield County, Stauffer Chemical Inc., was selected as the winner of the corporate award. Stauffer was praised by the Massachusetts Department of Environmental Quality Engineering for its cooperation in cleaning up a waste disposal site in that state. The company's long-standing commitment to protecting the environment was also pointed out. Mr. Wayne Jaeschke, corporate vice-president, accepted the award on behalf of Stauffer.

Readers of the "Hartford Courant" are probably familiar with Steve Grant's work. Grant, who is now the "Courant's" Capitol Bureau chief, previously covered the environmental beat for the paper. He consistently reported in a factual, objective manner, producing stories on subjects like the construction of I-284 or the clean-up of the Connecticut River. Grant received the journalism award for his excellence in environmental reporting.

The Housatonic Valley Association of Kent was selected as the recipient of the environmental education award. HVA has developed a program called "Watershed Ed," in which students at Housatonic-area schools are given the opportunity to learn about their environment firsthand. This program emphasizes field and technical studies of environmental topics and has been enthusiastically received by students and teachers alike. Other HVA educational activities include publishing a newsletter, sponsoring workshops and conferences, and holding environmental fairs. Tony Mitchell, education coordinator for HVA, accepted the award from Deland.

These award winners join several other Connecticut citizens and organizations previously recognized by EPA for outstanding environmental work. We hope that 1984's award ceremony will find environmentalists from our state honored once again. ■



Leslie Bieber photos

Recipients of EPA awards accepting plaques from Regional Administrator Michael Deland (left to right): Wayne Jaeschke, Stauffer Chemical Company; Tony Mitchell, Housatonic Valley Association.

Improving recreational access to the shoreline

By Diane Giampa, Public Participation Coordinator

Members of the Coastal Management staff are working on a project that, when completed, could increase our opportunities to fish, hike, boat, picnic and sunbathe along the Connecticut coast. Recreational space and facilities are always at a premium, especially now that there are limited funds available to buy properties to improve access to the coastal area. It makes sense, then, to take a look at parcels of land that are already publicly owned to see if any of them have the potential to be used for additional public access to the waterfront.

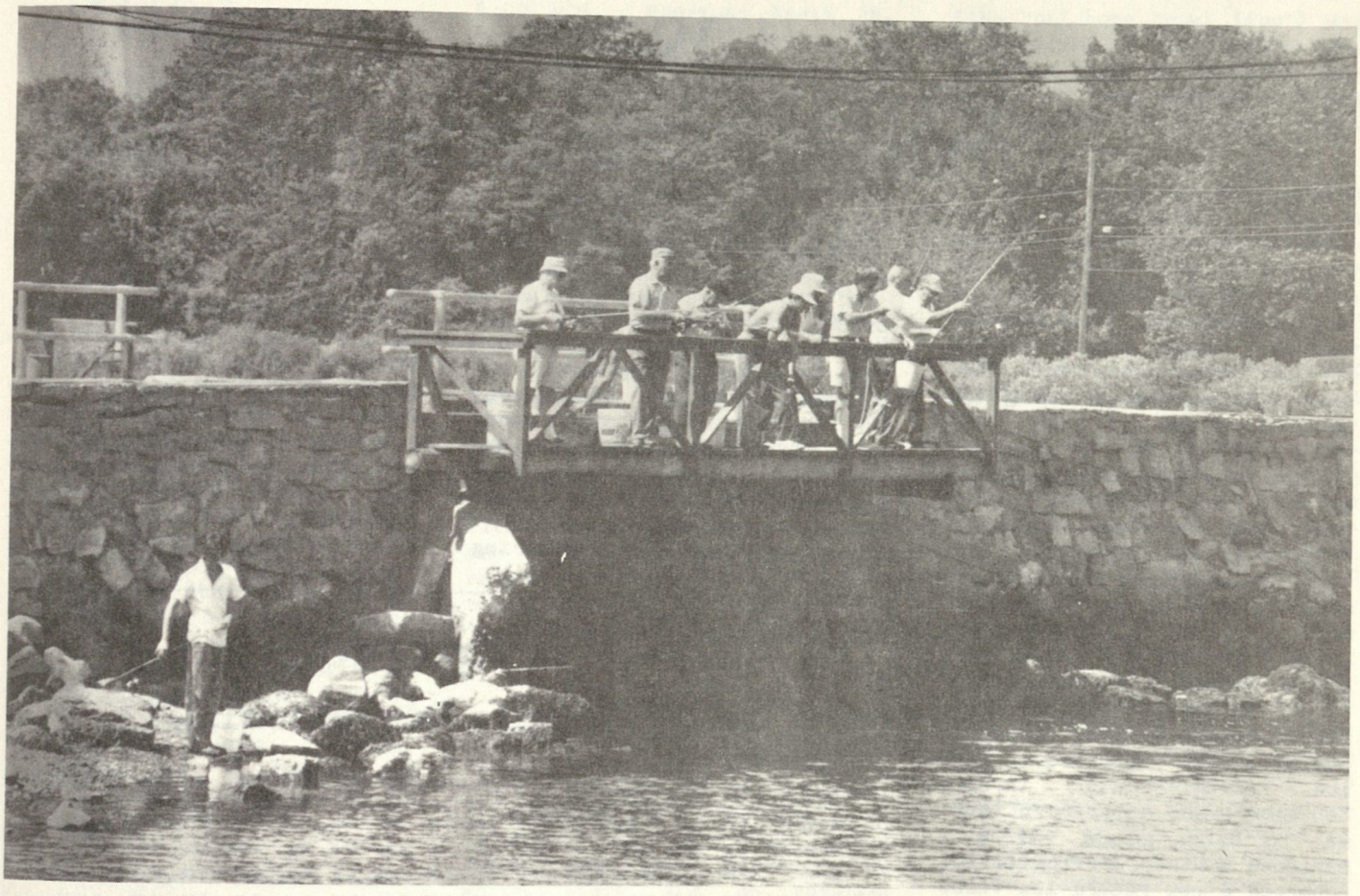
Various state agencies own parcels of land throughout Connecticut. The DEP, for example, in addition to the property it purchases, sometimes has surplus land transferred to its jurisdiction by other state agencies. It also is responsible for the land the state receives through the gifts and bequests of private citizens. The Department of Transportation owns land throughout the state as well. It holds a certain amount of land on each side of a state road in reserve in case the road ever needs to be widened, or to provide space for snow plowing, for rest areas and shoulders, or for water runoff. This extra land is acquired when the road is built, but not all of it is needed for these purposes and so it is considered to be excess property.

Art Rocque Jr.

Early morning visitors provide breakfast for the gulls at Essex Landing.

CAM staff members identified roughly 350 state-owned waterfront parcels in the coastal boundary and then studied each of them to determine its potential as a recreational spot. They also gathered recommendations from the Parks and Recreation Unit of the DEP, which is responsible for managing the properties, as to where the need for improved access is greatest, and where the environmental and economic results of increased use are likely to be most acceptable. Some of the sites could be examined using maps and aerial photographs; if the slope of the area was dangerously steep or if it contained sensitive tidal wetlands or rare species of plants that might be damaged, it would be eliminated. Some parcels were simply too small or too difficult to reach. But ultimately, about 100 locations were selected for visits during which a number of characteristics were evaluated.

Essentially, CAM staff members wanted to determine what the environmental limitations of each site were, and whether or not the use of the parcel could or should be improved by activities such as posting right-of-way signs, clearing footpaths, creating or expanding the parking capacity, and even constructing facilities such as restrooms and picnic



Charlie Evans

"Standing Room Only" at a popular fishing spot off the Mason's Island Causeway.

grounds. The pieces of land that were studied were relatively small, most of them under five acres in size, but in each case the field personnel took notes on the kinds of trails and roads on the land, the cleanliness of the water, the condition of the property, the quality of the view of the surrounding area, and evaluated the potential for expanded recreational opportunities there.

They also took into consideration the current use of the surrounding land since they wanted to avoid any problems of overcrowding in the area by making sure that increased access would be compatible with the needs of the people who lived in or near the particular site. Many spots were eliminated because they were too difficult to reach. On the other hand, some visits revealed that the parcel was being used to its fullest capacity already and, as a result, it had safety or litter problems that should be addressed.

When the study is completed, those involved in the project expect that several locations with excellent recreational potential will have been identified, and this is a promising first step. They will then discuss their recommendations with members of the Parks and Recreation Unit of the DEP, who will in turn present final agency recommendations to the Commissioner for action. When funding does become available to develop and maintain additional coastal access areas for Connecticut's citizens, it will be important that we know the location of the prime sites that will have been revealed through this research effort. ■

coastal area management
71 capitol avenue hartford, conn. 06106

1983 Water resources summary

Precipitation during 1983 was well above normal at all stations inventoried with several stations establishing new annual records.

The year 1983 may be divided into three distinct periods based upon the recorded precipitation at the 12 primary stations inventoried; 35 stations actually make up the total network. The first period, from January through May, was a period of excessive rainfall, with 11 of 12 stations establishing new maximum monthly records during April. The second period, from June through September, was a period of normal to below normal rainfall. Hartford Weather Service Office reported a new record low value during July. During the third period, from October through December, the state received excessive amounts of rainfall with new monthly records being established in both November and December. In all, 14 new monthly record high values were established during 1983 and five new annual high values were established. One record low monthly value was established during 1983.

The areas of the state receiving the greatest amounts of precipitation during 1983 were the upland areas located in southern Connecticut, from the Connecticut River to the New York border. This area received rainfall amounts in excess of 20" above the expected median.

In summary for 1983, streamflow was normal in January and excessive from February through June due to the heavy precipitation over this period. Streamflow declined during the summer normal flows in July and August. A deficient condition was reached in September but returned to normal in October and November. The year ended with streamflow again in the excessive range. Year-end conditions were over 200 percent above median.

Ground water levels during 1983 fluctuated greatly; mostly normal levels in January rose to many record highs in April, dropped into the normal to low range by September, and then rose again into the high range statewide by December. Summer low levels were variable because of scattered thunderstorm activity. ■

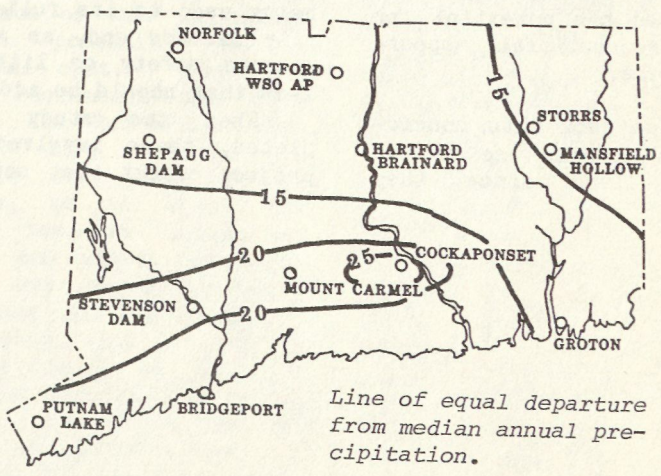
Precipitation

January 1, 1983 - December 31, 1983

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	1983 DEPARTURE FROM ANNUAL MEDIAN
BRIDGEPORT	3.72	2.40	9.21	10.72*	4.77	3.72	1.66	2.57	2.20	4.63	6.58	4.74	56.92	15.50
COCKAPONSET	6.30	4.39	9.69	12.84*	5.63	3.36	2.23	3.24	1.62	9.39	9.40*	6.90	74.99*	25.10
GROTON	4.69	4.51	6.55	10.38*	4.60	3.02	1.93	4.92	1.35	6.02	10.88*	5.49	64.34*	14.44
HARTFORD WSO	4.68	3.83	6.86	9.90*	4.82	2.61	1.07+	2.55	2.10	5.52	6.09	5.97	56.00	13.22
HARTFORD BRAN	4.07	2.43	6.47	9.99	5.21	3.53	1.21	2.39	1.84	5.95	6.28	5.77	55.14	11.20
MANSFIELD	5.16	4.82	7.23	11.35*	5.55	2.42	1.39	2.80	1.48	6.63	7.24	6.04	62.11	16.82
MOUNT CARMEL	5.21	4.63	6.85	14.44*	5.67	3.19	1.57	6.90	2.54	6.61	7.57	6.90	72.08*	23.52
NORFOLK	5.31	4.64	6.90	10.79*	4.80	5.81	1.54	3.73	2.37	3.89	6.75	6.96	63.49	10.32
PUTNAM LAKE	5.59	3.11	8.94	11.97*	5.19	2.66	2.42	2.42	1.58	9.71	5.52	9.67*	68.68*	18.14
SHEPAUG	5.60	4.35	8.20	9.65*	6.00	2.86	2.20	2.30	1.60	6.40	5.25	7.25	61.36	12.96
STEVENSON	6.32	4.07	10.52	13.89*	5.68	2.48	2.24	3.46	1.45	7.90	6.94	9.02	73.92*	24.22
STORRS	5.36	4.75	7.25	9.94*	5.78	2.21	1.52	2.98	1.43	6.84	7.93	6.63	62.62	15.06

* Indicates new record high value + Indicates new record low value

Departures from Median Annual Precipitation



Line of equal departure from median annual precipitation.

Hatchery open for public fishing

DEP Deputy Commissioner Dennis DeCarli recently announced the details of the operation of the public fishing ponds at the Quinebaug Valley Hatchery in Plainfield for the 1984 fishing season.

"The fishing ponds," DeCarli said, "will open on Saturday, March 3, and will be operated on weekends and holidays through May 28. These facilities will be available to individual anglers through April 20 and, following the opening of the regular fishing season on April 21, will be available to youth-oriented, disabled, and senior-citizen organizations by advanced group reservation."

The public fishing facilities at the Quinebaug Valley Hatchery consist of two ponds, each two acres in size. One pond is restricted to fly fishing with a single barbless hook and the other is restricted to fishing with lures with a single barbless hook. Each pond contains trout nine inches and larger with some fish weighing more than three pounds. A wheelchair ramp is provided at each pond for those requiring special facilities. Admittance to the ponds is by permit only and a $1.00 fee per angler is charged. Each unlicensed angler under 16 years of age must be accompanied by a licensed angler 21 years of age or older.

Permits are obtained by telephone reservation, and no walk-in reservations will be accepted. Each permit holder is allowed to fish for a three-hour period. From March 3 through April 22, there will be three periods per day: 8:00 a.m. to 11:00 a.m., 11:30 a.m. to 2:30 p.m. and 3:00 p.m. to 6:00 p.m. Starting April 28, there will be four periods per day: 6:30 a.m. to 9:30 a.m., 10:00 a.m. to 1:00 p.m., 1:30 p.m. to 4:30 p.m. and 5:00 p.m. to 8:00 p.m.

Starting March 1, group reservations may be made for the period set aside for group use (April 21 through May 28) by calling the Bureau of Fisheries office in Hartford (566-2287). Reservations for group use must be made one week in advance. Groups numbering 15 or more individuals may request exclusive use of one of the ponds. Other operational rules such as the use of artificial lures or flies, one to one youth/adult supervision ratio and parking restrictions can be waived by special request when the reservation is made.

During the portion of the season set aside for group reservations, no individual reservations will be accepted. Individuals may, however, take advantage of the facilities during any time periods for which there are no advance group reservations. Potential anglers should call the hatchery to check on the group reservation status of the period in which they are interested. During unreserved periods, walk-in anglers will be admitted on a first-come, first-served basis. ■

Flounder

From page 14

tuaries are the major areas of winter flounder spawning activity, this limit eliminates trawling in virtually all flounder spawning areas. In addition, Department of Environmental Protection regulations prohibit the use of trawl vessels greater than 26 feet in length inside a zone west of the Housatonic River in Stratford and north of the line approximately one to two miles from shore. This regulation (the "offshore trawl line") was implemented to eliminate competition for the resource between the larger-sized trawlers and western Connecticut sport fishermen.

In addition to total catch and total landings, fisheries managers use a measure of abundance, called the catch per unit of fishing effort (CPUE), to determine the condition of the resource. There are various ways of measuring CPUE depending on the species and the fishery being investigated. For the flounder fishery, the measure used is to divide the pounds caught by the number of hours of trawl fishing used to take the trawl catch during a given period of time.

The Department of Environmental Protection has collected detailed catch per unit of effort information from commercial trawl fishermen since 1977. This information is instrumental in making determinations of the condition of our resources. The CPUE declined steadily from 1977 through 1980 during a period of generally declining abundance in the southern New England winter flounder resource. During the past three years, however, abundance has fluctuated at levels greater than that observed at the low point in 1980.

The recent trend in commercial and recreational winter flounder fisheries has indicated an increase in effort and in catch of the species. Concerns voiced by western Connecticut sport fishermen during the winter of 1982 were responsible for the implementation of the increased size limit for commercial fishermen and the western Connecticut offshore closure line for trawlers noted above. Given the importance of the species to Connecticut residents and the magnitude of landings along the north Atlantic coast, the species is likely to continue generating interest among fishermen and fisheries managers during the coming decade. ■

Trailside Botanizing

By G. Winston Carter

Staghorn sumac (Rhustyphina)

This handsome plant with its conspicuous red fruit which persists in the winter is often the source of much misunderstanding. It is not poisonous as people often believe. However there is a plant called poison sumac (Rhus vernix). In order to tell poison sumac from staghorn sumac it is important to remember only a few fundamental facts. Poison sumac is a plant of wet swampy areas while the other types of sumac grow on much drier ground. The fruit (berries) of poison sumac are grayish white and they dangle downward from the plant while all other sumacs have reddish fruit which points upwards.

The name "staghorn" refers to the velvet-like branches which resemble the antlers of a deer "in velvet." This is a characteristic which is absent in other species of sumac. Smooth sumac (Rhus glabra) is similar but lacks the velvet-like branches. Dwarf sumac (Rhus copallina) is smaller with shiny leaves having winged midribs. Fragrant sumac (Rhus aromatica) is also smaller and has fewer compound leaves.

Staghorn sumac is frequently found growing in old fields, pastures and clearings. It grows in rather poor dry soil. This shrub, or small tree, is moderately fast-growing and short-lived, growing up to a height of 35 feet. It often spreads by underground runners to form rather extensive clusters.

Staghorn sumac is sometimes planted as an ornamental tree along borders to attract wildlife. It is also very attractive in the fall because of its bright red foliage. A refreshing drink can be made by boiling the fruit. Numerous gamebirds and songbirds feed on the fruit. These include the ruffed grouse, ring-necked pheasant, Eastern phoebe, wood thrush and brown thrasher. Cottontail rabbits sometimes feed on the leaves and bark and the white-tailed deer use the plant for browse.

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